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From shadow banking to resilient market-based finance

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Abstract

Since the outbreak of the 2007-08 financial crisis, international and national regulatory authorities focused their attention on what has been originally called “shadow banking” i.e., entities and activities performing bank-like functions outside the regular banking system. Since 2011, the Financial Stability Board (FSB) has developed a monitoring framework aimed at strengthening the supervision and the regulation of shadow banking, and at transforming shadow banking into a resilient market-based finance. In 2018 the term shadow banking was simply replaced by non-bank financial intermediation (NBFI) to emphasize the forward-looking approach of the FSB to enhance the resilience of NBFI and establish the use of a common terminology. The goal of this paper is to shed light on the economics of shadow banking, its underlying entities, activities, and instruments, and examine how they are embedded within the current supervisory framework. Our goal is achieved following a two-steps approach: 1) provide an overview of the main contributions on shadow banking, highlighting its key features and driving forces, 2) describe the monitoring framework developed by the FSB that gradually led shadow banking towards a resilient form of market-based finance, and analyze data on activities and entities belonging to NBFI. An appropriate supervision and regulation of NBFI allows the economy to enjoy the benefits of financial innovation while avoiding financial turmoil.

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1. Introduction

Changes in financial techniques and financial regulation occurred during the last century paved the way for the development of non-bank financial intermediation (NBFI). This wave of financial innovation allowed non-bank financial institutions to compete with traditional banks in performing bank-like activities at low costs and in offering a broad range of high-yield investment opportunities. Such changes have gradually transformed the "originate-to-hold" banking model into a "originate-to-distribute" model based on a securitized-credit intermediation process, or simply "securitized banking" whose main pillars are asset securitization, securities financing transactions, and the mutual funds sector (Gorton and Metrick 2012). The securitized credit intermediation process is the backbone of the modern forms of NBFI that "...take(s) place in an environment where prudential regulatory standards and supervisory oversight are either not applied or are applied to a materially lesser or different degree than is the case for regular banks engaged in similar activities" (FSB 2011a), simply known as "shadow banking". The origin of shadow banking can be traced back to the mid-1900 in the United States when Government-Sponsored Enterprises started to securitize loans and generate the so-called asset-backed securities (ABS). The first time the term shadow banking appeared was in 2007 and since then many efforts have been done to track its key features and gauge its size. Shadow banking is not, or it is partially, subject to oversight and regulation from cognizant authorities and it also lacks direct public sector guarantees, such as liquidity backstop from central banks or government deposit insurance. These features raise relevant monitoring and regulatory issues as the identification of the perimeter of shadow banking is crucial for measurement and policy purposes.

Since 2011, the Financial Stability Board (FSB) started working on a global monitoring framework to express policy recommendations aimed to address financial stability risks arising from NBFI. The FSB's efforts to transform shadow banking into resilient market-based finance now refers to the primary goal of enhancing the resilience of NBFI, that is why in 2018 the term shadow banking has been replaced by non-bank financial intermediation.

The goal of this paper is to shed light on the economics of shadow banking, its underlying entities, activities, and instruments, and examine how they are embedded within the current supervisory and regulatory framework. Our goal is achieved following a two-steps approach: 1) provide an overview of the main contributions on shadow banking, highlighting its key features and driving forces, 2) describe the monitoring framework developed by the FSB that gradually led shadow banking towards a resilient form of market-based finance, and analyze data on activities and entities belonging to NBFI. Shadow banking is, indeed, a catalyst for the financial system and can generate spillovers to the real economy.[1] In good times shadow banking provides large scale benefits that may positively affect the real side of the economy, while in bad times it creates large scale deficiencies that may end up to severe financial crisis. Therefore, an appropriate supervision and regulation of NBFI allows the economy to enjoy the benefits of financial innovation while avoiding financial turmoil.

The paper is organized as follows. Section 2 provides an overview of the main contributions on shadow banking to identify its key features and driving forces. Section 3 is about the gradual evolution of monitoring and measurement criteria developed by the FSB, as well as the analysis of data on NBFI. Section 4 concludes and provides some policy implications.

[1] Morganti and Garofalo (2019).

2. Shadow banking: key features and driving forces

The term shadow banking was coined by McCulley (2007)[2] to roughly describe "…the whole alphabet soup of levered up non-bank investment conduits, vehicles and structures, ... who fund themselves with un-insured commercial paper, which may or may not be backstopped by liquidity lines from real banks". McCulley outlined some key elements which would have set the basement for future research, i.e., shadow banks are non-bank financial intermediaries that i) are not subject, or less subject, to oversight, ii) have no access to public backstops, such as government deposit insurance or central banks' discount windows, iii) are vulnerable to runs. Since then, a growing body of research aimed at identifying the key characteristics and driving forces of shadow banks. The heterogeneous nature through time and across countries of the financial system has led economists, experts in the financial industry, politicians, and regulatory authorities to formulate different "versions" of shadow banking, depending on the presumed key features.

Table 1. Shadow banking: main contributions, key features, and drivers (chronological order)

Contributions	Key features	Drivers
McCulley (2007)	"Unlike regulated real banks, who fund themselves with insured deposits, backstopped by access to the Fed's discount window, unregulated shadow banks fund themselves with uninsured commercial paper, which may or may not be backstopped by liquidity lines from real banks." or roughly "The whole alphabet soup of levered-up non-bank investment conduits, vehicles and structures"	
Pozsar *et al.* (2010)	"Shadow banks are financial intermediaries that conduct maturity, credit, and liquidity transformation without access to central bank liquidity or public sector credit guarantees. Examples of shadow banks include finance companies, asset-backed commercial paper conduits, limited-purpose finance companies, structured investment vehicles, credit hedge funds, money market mutual funds, securities lenders, and government-sponsored enterprises."	Gains from specialization and regulatory arbitrage
Financial Crisis Inquiry Commission (2010)	"Shadow banking refers to bank-like financial activities that are conducted outside the traditional commercial banking system, many of which are unregulated or lightly regulated. [...] Within this broad definition are *investment* banks, finance companies, money market funds, hedge funds, special purpose entities, and other vehicles that aggregate and hold financial assets. These entities are critical players in the markets for securitized products, structured products, commercial paper, asset-backed commercial paper, repurchase agreements, and derivatives."	Regulatory arbitrage
Gorton *et al.* (2010)	"In its broadest definition, shadow banking includes familiar institutions as investment banks, money-market mutual funds, and mortgage brokers; rather old contracts, such as sale and repurchase agreements ("repo"); and more esoteric instruments such as asset-backed securities, collateralized-debt obligations, and asset-backed commercial paper."	Regulatory arbitrage and financial innovation
Ricks (2010)	"Shadow banking refers simply to maturity transformation that takes place outside the terms of the banking social contract. A non-exhaustive list of shadow banking institutions would include: repo-financed dealer firms; securities lenders; structured investment vehicles (SIVs); asset-backed commercial paper conduits; some varieties of credit-oriented hedge funds; and, most importantly, money market mutual funds, which absorb other forms of short-term credit and transform them into true demand obligations."	
Tucker (2010)	"I am not …using "shadow banking" to refer to any old channel for credit intermediation other than bank lending. The corporate bond markets do not amount to a shadow bank. Rather, I am interested …in those instruments, structures, firms or markets which, alone or in combination, and to a greater or lesser extent, replicate the core features of commercial banks: liquidity services, maturity mismatch and leverage."	
FSB (2011a)	"A system of credit intermediation that involves entities and activities outside the regular banking system, and raises i) systemic risk concerns, in particular by maturity/liquidity transformation, leverage and flawed credit risk transfer, and/or ii) regulatory arbitrage concerns."	Regulatory arbitrage
Deloitte (2012)	"Shadow banking is a market-funded, credit intermediation system involving maturity and/or liquidity transformation through securitization and secured-funding mechanisms. It exists at least partly outside of the traditional banking system and does not have government guarantees in the form of insurance or access to the central bank. …The entities and activities included…are: money market mutual funds (MMMF), asset backed commercial paper (ABCP) conduits, asset-backed securities (ABS), non-agency mortgage-backed securities, collateralized debt obligations (CDOs), repurchase agreements (repos), securities lending, and agency mortgage backed securities. …we have excluded hedge funds, non-money market mutual funds, financial companies, insurance firms, and activities such as swaps/derivatives and clearing."	Financial innovation (specifically securitization and MMFs), deregulation

[2] Others before him identified some features of shadow banking but without using the term. D'Arista (1993) used the term parallel banking system to highlight the "…growing importance of a variety of unregulated financial intermediaries, mostly mortgage and finance companies, in replicating regular banking functions and activities at lower or negligible regulatory costs"; Rajan (2005) referred to a "non-banking intermediation system created by the technological, institutional and (de)regulatory changes occurred to the financial system in the previous 40 years".

Gerding (2012)	"The shadow banking system describes a web of financial instruments (asset-backed securities, credit derivatives, money market mutual funds, repurchase agreements) that connected commercial and household borrowers to investors in capital markets."	Regulatory arbitrage, deregulation, legal subsidies
Bernanke (2012)	"Shadow banking, as usually defined, comprises a diverse set of institutions and markets that, collectively, carry out traditional banking functions – but do so outside, or in ways only loosely linked to, the traditional system of regulated depository institutions. Examples of important components of the shadow banking system include securitization vehicles, asset-backed commercial paper (ABCP) conduits, money market mutual funds, markets for repurchase agreements (repos), investment banks, and mortgage companies."	
Schwarcz (2012)	"I therefore define shadow banking to mean not only the provision of financial products and services by shadow banks, but also the financial markets used to provide those products and services. …Thus, in addition to SPEs …enumerating ABCP conduits, limited-purpose finance companies and SIVs, …the term (shadow banks) would include finance companies, …hedge funds, …mutual funds, …GSEs, …and many investment banks."	Regulatory arbitrage
Kane (2012)	"A shadow bank is an institution or bank-sponsored special-purpose vehicle that has persuaded its customers that its liabilities can be redeemed de facto at par without delay (i.e. without default) even though they are not formally protected by government guarantees. My title adds a "y" and an "ing" (shadowy banking) … to stretch the shadows to include not just firms like money-market funds and government-sponsored enterprises, but instruments such as swaps, repurchase agreements, and AAA securitizations that may trade for substantial periods of time as if they carried zero performance risk."	Regulatory and safety-net arbitrage
Adrian and Ashcraft (2012)	"The shadow banking system is a web of specialized financial institutions that channel funding from savers to investors through a range of securitization and secured funding techniques…without the direct and explicit sources of liquidity…"	Financial innovation, regulatory arbitrage, agency problems
Gennaioli *et al.* (2013)	"Shadow banking typically describe financial activities occurring outside the regulated banking sector…such activities took the form of rapidly expanding provision of short-term safe debt to financial intermediaries through money market funds and other sources outside of the regulated banking sector."	Demand for safe debt/collateralized assets
Jackson (2013)	"Credit intermediation involving entities and activities (fully or partially) outside the regular banking system' but shadow banking is almost certainly broader than this."	Regulatory arbitrage, search for high yields and low funding costs
Adrian *et al.* (2013)	"Credit, maturity and liquidity transformation outside the regular banking system."	Gains from specialization, financial innovation, regulatory arbitrage
Acharya *et al.* (2013)	"Shadow banking is that part of the intermediation sector that performs several functions that traditionally are associated with commercial and investment banks but runs in the shadow of the regulated banks, in the sense that it is off-balance sheet and less regulated."	Regulatory arbitrage
Mehrling *et al.* (2013)	"Money market funding of capital market lending, sometimes on the balance sheets of entities called banks and sometimes on other balance sheets"	Search for yield, demand for money substitute instruments
Claessens and Ratnovski (2014)	"All financial activities, except traditional banking, which require a private or public backstop to operate. …activities that need a backstop – because they combine risk transformation, low margins and high scale with residual "tail" risks – are systemically-important shadow banking."	Risk transformation and spread undesirable risk across the financial system
Kane (2014)	"Shadowy banking is financial activity that is engineered to extract implicit subsidies from government safety nets. … The shadows obscure organizational forms and transactions strategies that circumvent regulatory restraints and extract subsidies by regulation-induced innovation."	Regulatory and safety-net arbitrage
IMF (2014a)	"A large part of the financing in today's economy is intermediated in wholesale money markets through banks and other financial intermediaries and lent in the capital markets. This is nowadays considered as shadow banking."	Gains from specialization, financial innovation, regulatory arbitrage
IMF (2014b)	"Financing of banks and non-bank financial institutions through non-core liabilities, regardless of the entity that carries it out."	Search for yield, regulatory arbitrage

Among all the definitions reported in Table 1, the ones that have become the most popular were those by Pozsar *et al.* (2010) and by the FSB (2011a).

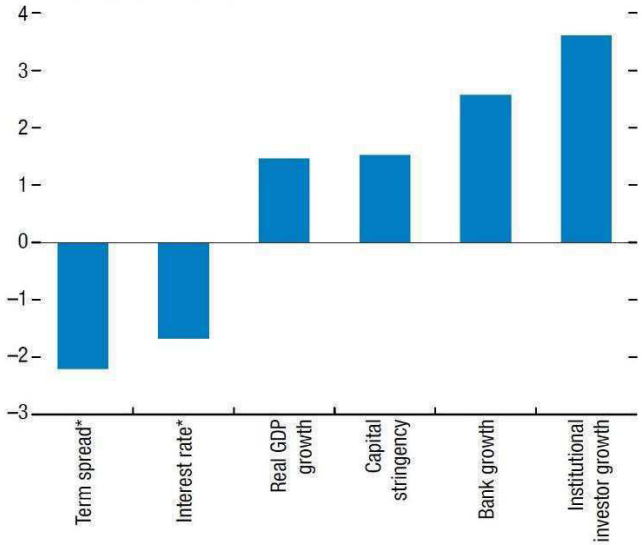
Pozsar *et al.* (2010) set out the basics for understanding the mechanisms underlying shadow credit intermediation and its interactions with traditional banking. The large poster map reported at the beginning of their paper shows the complexity of the shadow banking network, which can be briefly resumed in Table 2. Shadow banking is embedded within the so-called "securitized banking", as defined by Gorton and Metrick (2012), which mainly involves asset securitization, securities refinancing transactions (mostly repurchase agreements – repos), and the mutual funds sector. The authors wanted to emphasize the role of securitization in the shadow banking system both as the main intermediation activity and as a key source of collateral used, mainly through repos, to raise funds from mutual funds. In the traditional banking system, the total quantity of deposits represents the obligation of the banking system to creditors outside the banking system. This is not the case for a securitized banking system, where securitization opens up for new sources of funding and new investment opportunities: as balance sheets expand, new creditors must be found. These creditors mostly belong to the mutual funds industry. The way whereby financial institutions raise funds in addition to core demand deposits is called wholesale funding.

Table 2. Steps, entities, and funding techniques mainly involved in shadow credit intermediation.

	FUNCTIONS	SHADOW BANKS	FUNDING
Step 1	Loan origination	Finance companies, commercial banks subsidiaries	Commercial paper, medium/long term bonds
Step 2	ABS issuance	Structured finance vehicles (SFVs)	ABS
Step 3	ABS intermediation	Broker-dealers	Securities financing transactions (repos)
Step 4	Wholesale funding	Mutual funds	Mutual fund shares

The FSB (2011a) broadly defined shadow banking as "credit intermediation involving entities and activities outside the regular banking system" to provide a widely accepted definition that would have laid the foundations for developing a homogeneous monitoring and regulatory framework across jurisdictions. Such definition implies that shadow credit intermediation "...takes place in an environment where prudential regulatory standards and supervisory oversight are either not applied or are applied to a materially lesser or different degree than is the case for regular banks engaged in similar activities".
The identification of shadow banking's driving forces is, therefore, crucial to understand its characteristics, its evolution over time and across countries, and to propose effective regulatory actions. Looking at Table 1, it emerges that the main factors that contributed to shadow banking development were regulatory arbitrage, financial innovation, and the search for yield motive. At this regard, the International Monetary Fund (IMF) provided empirical evidence by conducting a panel regression analysis on some macroeconomic and regulatory variables that were supposed to be correlated to the shadow banking growth rate over the period 1990-2013 (see Figure 1).[3]

Figure 1. Drivers of shadow banking growth (% contribution)



Source: IMF (2014b), Figure 2.7 Panel 1. Note: * refers to post-2008 variables.

Shadow banking was gauged as the sum of other financial intermediaries and financial auxiliaries for the Flow of funds national data. The sample of countries consisted of 29 mostly

[3] IMF (2014b).

advanced economies.[4] Full estimation results and other statistics are not reported for brevity, however Figure 1 shows the impact on growth rates for shadow banking of a 1 standard deviation shock in each of the shown dependent variable. All variables are significant at the 5% level. It emerges that a higher growth rate of shadow banking is positively correlated to i) tighter capital stringency, ii) lower term spreads and interest rates, iii) larger dimension of institutional investors (mutual funds), iv) larger banking sector, v) higher real GDP growth rate.[5]

Detecting arbitrage opportunities and enjoying the related benefits is the essence of a trader's job. Many of these opportunities are enjoyed by financial institutions in exploiting leaks in the regulatory regimes. Stringent capital requirements increase the incentive for market participants to engage in regulatory arbitrage transactions, thus stimulating the shift of activities from banks to non-banks intermediaries. As explained by Fleischer (2010), "regulatory arbitrage occurs when parties take advantage of a gap between the economics of a deal and its regulatory treatment, restructuring the deal to reduce or avoid regulatory costs without unduly altering the underlying economics of the deal", or by Partnoy (1996) "financial transactions designed specifically to reduce costs or capture profit opportunities created by differential regulations or laws". Regulatory arbitrage is a response to costly financial regulation: financial innovation can develop efficient mechanisms for eluding taxes, accounting requirements, and investment restrictions. Since shadow banking is not subject to the same regulation and oversight as of traditional banking, shadow banks are able to gain a competitive advantage relatively to banks by not internalizing the true cost of risks, and banks may use shadow entities to circumvent their prudential regulatory requirements and take on additional risk (Korinek and Kreamer 2014, Korinek 2015). Driven by regulatory arbitrage incentives, shadow banks enjoy major opportunities for growth and profitability over traditional banks. Excessive leverage, maturity/liquidity mismatches, and imperfect credit risk transfer, are examples of strategies conducted by shadow banks that can spill over negatively to the rest of the financial system.

The term spread, computed the spread as the difference between long-term interest rates and three months T-bills interest rates, was used by the IMF to capture the "search for yield" component of shadow banking. Lower values of the spread imply the interest rates on short- and long-term government debt get closer (the bond yield curve becomes flatter), thus market participants are attracted to the high-return instruments provided by the shadow banking system rather than to the equivalent low-return government debt securities. The shadow banking system is indeed an important provider of innovative structured finance instruments. Such instruments satisfy a large range of risk/return preferences, and they are very attractive to outside investors mostly because they consist of high-yielding AAA-rated securities (such as securitized assets) that are perceived to be as safe as other similar fixed income instruments (Coval *et al.* 2009, Caballero 2010, Jackson 2013). The seek for these high-yield instruments is usually encouraged by a context of relatively low interest rates that shrinks the demand for Treasury or corporate bonds, as it happened in the U.S. before the outbreak of the 2007-2008 financial crisis (Goda *et al.* 2013, Goda and Lysandrou 2014).

The growth of mutual funds and the growth of the banking sector are considered by the IMF as proxies of financial innovation. Mutual funds represent the ultimate lenders of the shadow banking system. The banking sector and shadow banking can be highly interlinked, with banks often i) being part of the shadow banking chain, ii) providing explicit or implicit support to shadow banking entities, iii) investing in financial products issued by shadow banks, iv)

[4] Countries included are: Advanced economies with Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovak Republic, Slovenia, Spain, Sweden, United Kingdom, United States; Emerging market economies with Hungary, Lithuania, Poland.

[5] Details of the analysis are available at IMF (2014b), Annex 2.3.

exposed to common concentrations of risks in financial markets, via asset holdings and derivative positions, even if there is no direct connection with shadow entities.
The three key drivers of shadow banking mutually reinforce with each other. By one hand, investors' greed for high-yield investment opportunities induces the financial industry (mostly non-bank financial institutions) to manufacture innovative financial products that usually take advantage of leaks in regulatory and supervisory regimes to increase earning performances. On the other hand, financial innovation can be driven by the need to overcome tight regulatory regimes that otherwise would curb returns, or to seek safe-perceived investment opportunities that provide higher returns than equivalent government bonds.

3. The perimeter of analysis and the related monitoring framework

Since 2011 the FSB conducts yearly monitoring exercises, formerly "Global Shadow Banking Monitoring Reports" and since 2019 "Global Monitoring Report on Non-Bank Financial Intermediation", to gauge scale, trends, and risks associated to shadow banking. These reports gather data from the national financial accounts of each jurisdiction involved in the analysis. Every year, the FSB refines data collection procedures, and improves data reporting and disclosure techniques to ensure an effective monitoring.
The FSB's monitoring framework for shadow banking originally consisted of seven high-level principles (see Table 3) which have gradually led to the following monitoring aggregates: i) the NBFI sector, comprising all financial institutions that are not central banks, banks or public financial institutions, ii) other financial intermediaries (OFIs), a subset of the NBFI sector, comprising all financial institutions that are not central banks, banks, public financial institutions, insurance corporations, pension funds, or financial auxiliaries,[6] iii) a narrow measure of NBFI, i.e. those entities of the NBFI sector that are involved in credit intermediation activities that may pose bank-like financial stability risks (excessive or unregulated maturity/liquidity transformation and leverage, and imperfect credit risk transfer) and/or regulatory arbitrage. The previous aggregates allow the FSB to consider two definitions of shadow banking: the broad one (entity-based) represented by the OFIs aggregate, and the narrow one (activity-based) represented by the narrow measure of NBFI.

Table 3. FSB's high-level principles for monitoring shadow banking

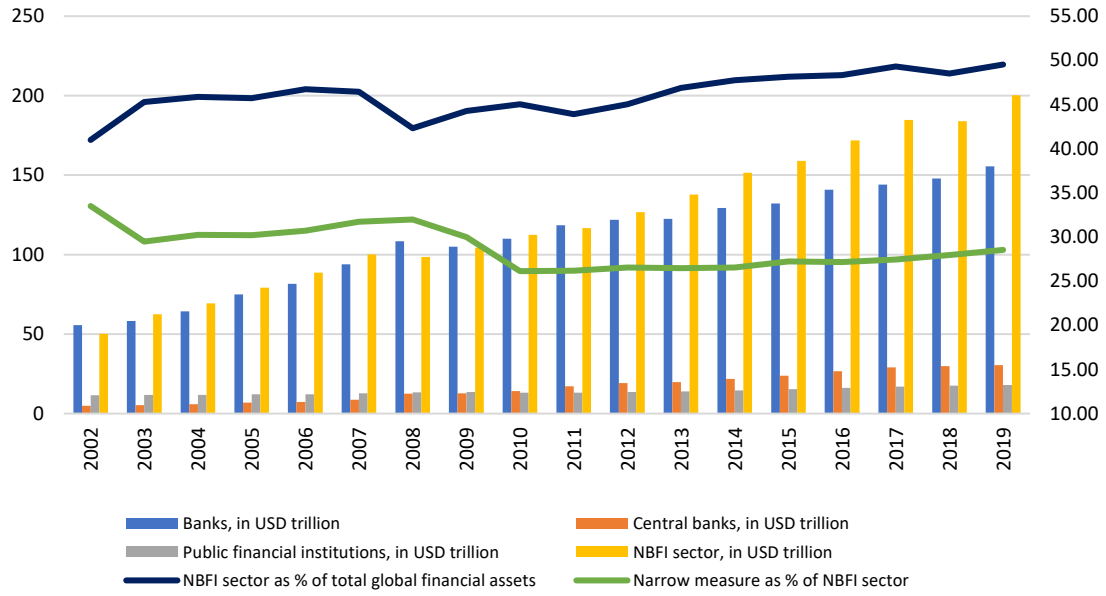
Principles	Description
1) Scope	Obtain a comprehensive picture of the shadow banking system and of the risks that it poses to the entire financial system
2) Process	Identify and assess the risks on a regular and continuous basis
3) Data/information	Collect all necessary data and information (both at a macro system-wide and a micro entity/activity-based level), and define the regulatory perimeter for reporting
4) Innovation/mutation	Capture innovations and mutations in the financial system which could lead to emerging risks
5) Regulatory arbitrage	Pay attention to changes in incentives created by changes in regulations
6) Jurisdiction-specific features	Take into account the structure of financial markets and regulatory frameworks within each jurisdiction as well as the international connections with others
7) Information exchange	Exchange appropriate information both within and across jurisdictions on a regular basis

Source: FSB (2011b).

[6] OFIs include, for example, investment funds, captive financial institutions and money lenders, central counterparties, broker-dealers, finance companies, trust companies and structured finance vehicles.

As reported by Figure 2, global financial assets mostly belong to the banking or NBFI sectors. Except for 2008 and 2009, NBFI has always been larger than the banking one, with an average share of 46% over total global financial assets during the 2002-2019 period. Between 2012 and 2019 the ratio NBFI assets/banks assets grew from 103% to almost 129% implying an increasing reliance of investors on non-bank credit intermediation. The narrow measure of shadow banking as a share of NBFI total assets falls from nearly 32 percent in 2008 to 26 percent in 2011, then shows a slightly upward trend that reached 28.5 percent in 2019.

Figure 2. Total global financial assets



Left-hand axis: USD trillion. Right-hand axis: percentage. Source: data from FSB (2020). Jurisdictions included: Argentina, Australia, Brazil, Canada, Cayman Islands, Chile, China, Euro area, Hong Kong, India, Indonesia, Japan, Korea, Mexico, Russia, Saudi Arabia, Singapore, South Africa, Switzerland, Turkey, United Kingdom, United States.

The narrow definition, introduced by the FSB in 2015, complements the broad one with an activity-based approach which classifies non-bank financial entities into five economic functions (EFs) and allows to judge the involvement of non-bank financial entities in shadow banking by looking through their economic activities (see Table 4). The approach is also forward-looking since it can capture emerging entities that conduct such economic functions and that can generate shadow banking risks.[7]

Table 4. Classification by Economic Functions of NBFI

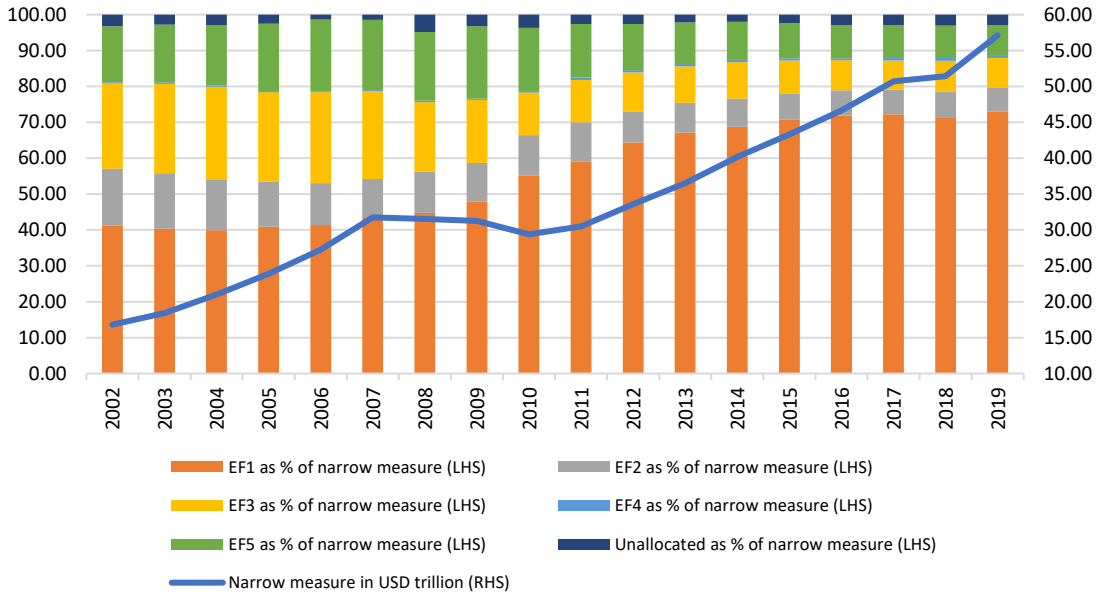
EFs	Definition	Typical entity types
EF1	Management of collective investment vehicles with features that make them susceptible to runs	Money Market Mutual Funds (MMF), fixed income funds (FIFs), mixed funds, credit hedge funds, real estate funds
EF2	Loan provision that is dependent on short-term funding	Finance companies, leasing/factoring companies, consumer credit companies
EF3	Intermediation of market activities that is dependent on short-term funding or on secured funding of client assets	Broker-dealers, securities finance companies
EF4	Facilitation of credit creation	Credit insurance companies, financial guarantors, monolines
EF5	Securitisation-based credit intermediation and funding of financial entities	Securitisation vehicles, structured finance vehicles (SFVs), asset-backed securities

Source: FSB (2021).

[7] See FSB (2015). The idea of a similar approach was originally proposed by Pozsar *et al.* (2010): while talking about policy recommendations, the authors advocate a regulation by function approach rather than a regulation by institution approach.

Entities involved in these five EFs present a high degree of heterogeneity and diversity in business models and risk profiles, both across and within the various segments of NBFI. The narrowing exercise conducted by the FSB has allowed regulators to discriminate among the economic functions performed by shadow banks and thus create a common policy framework to which authorities must refer to identify the sources of shadow banking risks in each jurisdiction.

Figure 3. Share of each economic function in the narrow measure of NBFI



Left-hand axis: percentage. Right-hand axis: USD trillion. Source: data from FSB (2020). Jurisdictions included: Argentina, Australia, Belgium, Brazil, Canada, Cayman Islands, Chile, China, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Switzerland, Turkey, United Kingdom, United States.

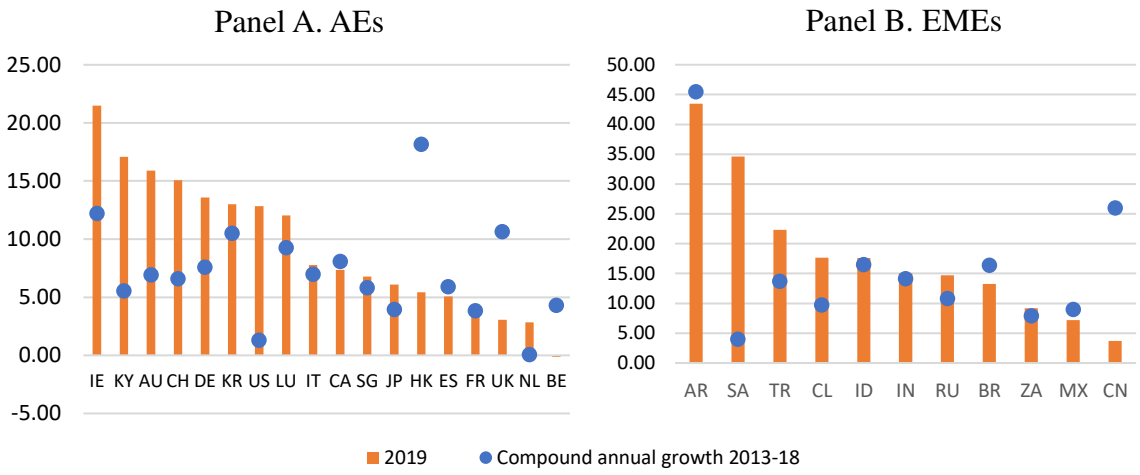
The blue line of Figure 3 plots the size of the narrow measure in USD trillion. From 2003 to 2007 the narrow measure grew by 89% (from USD 16.81 to 31.77 trillion), followed by a -7.5% between 2007 and 2010, and by a 94% increase during the last decade (from USD 29.4 in 2010 to 57.12 trillion in 2019). The largest contribution to the narrow measure of NBFI is from EF1, i.e., management of collective investment vehicles with features that make them susceptible to runs. Before 2008 the share of EF1 was about 40%, followed by EF3 (25%), EF5 (15 to 20%), and EF2 (10%). In the pre-crisis period, the growth of the narrow measure was indeed primarily driven by entity such as money market mutual funds, structured finance vehicles, and broker-dealers that often-received support from banks, while after the 2007-08 financial crisis investment funds played an even greater role in the growth of the narrow measure. As a result, the share of EF1 assets increased from 45% in 2008 to 73% in 2019. The share of EF4 (facilitation of credit creation) has always been very small.

It is interesting capture differences of the narrow measure growth among each of the 29 countries included in the FSB (2020) report, by also considering their classification in terms of Advanced Economies (AEs) and Emerging Market Economies (EMEs). Figure 4 provides an analysis of the narrow measure across countries grouped by level of development.[8] 21 of 29 jurisdictions included in FSB (2020), reported a higher annual growth rate for the narrow

[8] We adopt the same country classification provided by the FSB (2020).

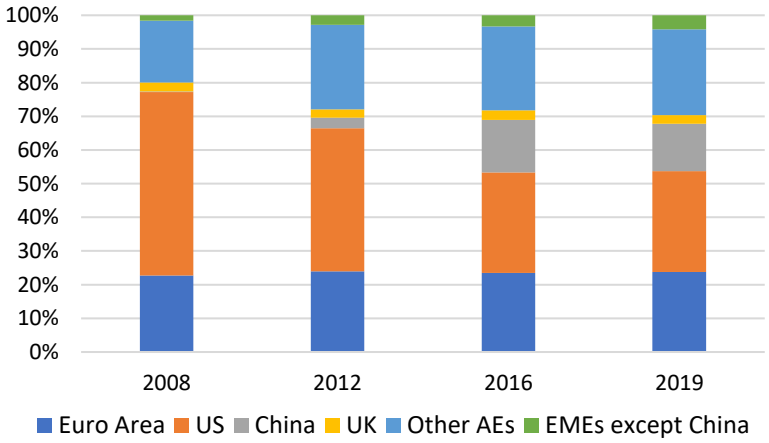
measure in 2019 than their annualized growth rates from 2013-18. Eight AEs (Ireland, the Cayman Islands, Australia, Switzerland, Germany, Korea, the US and Luxembourg) and eight EMEs (Argentina, Saudi Arabia, Turkey, India, Chile, Indonesia, Russia and Brazil) saw their narrow measure increase by over 10%. Only Belgium reported a very small decline in the narrow measure (-0.12%).

Figure 4. Growth rates of the narrow measure in AEs and EMEs



Source: data from FSB (2020).

Figure 5. Share of the narrow measure in 2008, 2012, 2016, 2019



Source: data from FSB (2020).

According to Figure 5, in 2019 the US accounted for the largest share of narrow measure assets representing around 30% of the total narrow measure, even though such share has decline since 2006 (almost 50% in 2006, 40% in 2012, and 30% in 2016). The share of the Euro Area countries has remained stable over time around the 23-24%, followed by other AEs, China, and EMEs except China.

Figure 6. Risk metrics by entities for each EF

Source: our elaboration on FSB (2020). No data available for EF4. MMFs: Money market funds. FIFs: Fixed income funds. SFVs: Structured finance vehicles. The arrows pointing up (down) indicate an increase (decline) in the median value in 2019 compared to 2018, while the horizontal bar indicates little change. The shades of blue indicate the relative degree of credit intermediation, maturity transformation, liquidity transformation and leverage across the entity types shown in the table, measured as the median value of the metric. For each risk metric, the darkest (lightest) color corresponds to the entity type with the largest (lowest) engagement in the relevant metric/activity, in the median.

The narrow definition of shadow banking tells us that activities carried out by NBFI are of particular importance as they potentially pose risks to financial stability arising from maturity/liquidity transformation and leverage. Figure 6 shows the degree of engagement in the relevant risk metrics/activity (shades of blue) as well as the change in the median value between 2019 and 2018 (red or green arrows denote, respectively, increase or reduction, while orange bars denote little change) for entities belonging to each EF. MMFs (EF1) exhibit the largest involvement in credit intermediation (darkest blue), followed by FIFs, Finance Companies, and SFVs, while mixed and hedge funds are the least involved (lightest blue). Entities belonging to EF1 emerge to be more engaged in maturity and liquidity transformation than entities belonging to other EFs, but they show the lowest degree of leverage. On the opposite, finance companies and SFVs shows the highest degree of leverage. Between 2019 and 2018, the risk metric of credit intermediation increased for MMFs and mixed funds, maturity transformation increased for FIFs and mixed funds and fell for MMFs and broker-dealers, liquidity transformation increased for hedge funds and fell for broker-dealers, while leverage increased for hedge funds, broker-dealers, and SFVs and fell for finance companies.

The efforts of regulatory authorities are therefore aimed at reducing risk metrics or at least keeping them stable in order to prevent the build-up of excessive credit, maturity/liquidity transformation, and leverage, that may threaten financial stability. Mutual funds engaging in liquidity or maturity transformation that do not effectively manage liquidity risk may face greater liquidity strains if they experience large and unexpected redemptions, especially under stressed market conditions. The decrease in the risk metrics of maturity and liquidity transformation for broker-dealers is a good signal since market liquidity can evaporate during period of financial distress, making broker-dealers unable to efficiently play their critical role in market-making and price discovery, and implying important consequences for financial stability. However, the increase in leverage may increase vulnerability of broker-dealers to roll-over risk or to runs by lenders, particularly if their funding is primarily dependent on short-term, even intra-day, funding (e.g., repos). Securitization generally reduces funding costs for both bank and non-bank financial entities, facilitates the availability of credit to the real economy, and allows credit risk to be diversified and spread among outside investors. However, as occurred in the financial crisis of 2007-2008, securitization can generate greater risk in financial systems with relatively weak lending standards, since the ABS market is sensitive to sudden reductions in market liquidity, particularly in the case of complex or opaque securitization vehicles.

Since 2015, the efforts of the FSB in monitoring size, trends, risks of shadow banking were aimed to transform shadow banking into resilient market-based financing. Following the path

to "…emphasize the forward-looking aspect of the FSB's work to enhance the resilience of non-bank financial intermediation and clarify the use of the technical terms", in 2018 the FSB replaced the term "shadow banking" with "non-bank financial intermediation" (FSB 2019).

4. Conclusions

The NBFI sector complements traditional banking, acts as a catalyst for the financial system, and generates spillovers to the real economy. However, the use of the term "shadow banking" has always cast a pejorative tone on NBFI since credit intermediation outside the traditional channels can arise systemic risk concerns. In good times shadow banking provides large scale benefits that may positively affect the real side of the economy, while in bad times it creates large scale deficiencies that may end up to liquidity runs and eventually to severe financial crisis. In this sense, shadow banking is said to be pro-cyclical. Benefits can be assessed in terms of providing alternative sources of liquidity to banks and non-bank financial entities, increasing the efficiency of traditional credit intermediation channels, supporting market liquidity and risk sharing, spurring competition in financial markets that may lead to further innovation.

Shadow banking can become a source of systemic risk when involving activities that are typically performed by banks, such as maturity/liquidity transformation and the creation of leverage. Connections between shadow and traditional banking must be carefully considered by regulators and market participants. Banks or bank-owned entities might be involved in the shadow credit chain, and thus they might also be exposed to shadow banking risks. That is why the FSB has developed a monitoring framework of shadow entities and activities, aimed at developing general recommendations in strengthening the regulatory and the supervisory framework of NBFI. In promoting a coordinated global action, the approach adopted by the FSB in transforming shadow banking into a resilient market-based finance has been, so far, a correct and winning strategy to achieve the goals of financial development and stability. Appropriate and effective supervision and regulation of the areas where systemic risk and regulatory arbitrage concerns may arise are crucial to reach the previous goals. Policy makers and regulators must carefully pay attention to the segments mainly involved in shadow banking, i.e., securitization vehicles, securities financing transactions, and mutual funds.

Developing policy recommendations for NBFI can be tricky for regulatory authorities since new regulations, or changes to existing regulations, can create arbitrage opportunities. When choosing the optimal level of regulation and the limits to which public guarantees could be extended to NBFI, policy makers must take into accounts the trade-off between increasing regulation and regulatory arbitrage incentives, and the trade-off between increasing safety nets and bailouts rent extractions.

However, new vulnerabilities have emerged in the recent years, such as high political risks, rising trade barriers, increased geopolitical tensions, high debt, the pandemic crisis, the Ukrainian war, and lastly the energy crisis. Therefore, the monitoring framework of the FSB must always adapt to the developments of financial intermediation, trying to adequately address the issues that might exacerbate aggregate risk and threaten financial stability.

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